

## FLINT WHEEL LIGHTER WITH A SAFETY DEVICE

### Field of the Invention

[0001] The present invention relates to a lighting apparatus, particularly to a flint wheel lighter with a safety device.

5    Background of the Invention

[0002] The flint wheel lighter widely used at present is a electronic lighting apparatus employing a flammable gas, such as butane, and natural gas etc., as fuel, and including a casing, a fuel container disposed in the casing, a windproof hood above the fuel container. A vent assembly is 10 provided on the same side as that for the windproof hood, while an ignition assembly is provided on the other side. Said ignition assembly comprises a press plate, a flint, a flint spring, and a flint wheel, which are assembled conventionally. Said vent assembly comprises a vent valve and a vent needle assembled conventionally. Said vent needle may functions 15 cooperatively with the press plate. If ignition is required, a user may rotate the flint wheel clockwise to cause the flint producing electric sparks, and in the meantime pressing down the press plate with a finger to cause the press plate pushing up the vent needle, so as to open the vent valve by the vent needle, resulting letting out the flammable gas to fire. A lighter, 20 in case that no safety device is provided, is very easy to be ignited and results in hurts to children and even damage to public safety due to the inflammable gas contained therein. In some countries and areas, it has been forbidden,, or will forbid, to produce and sell flint wheel lighters without any safety device.

25    Summary of the Invention

[0003] The technical problem and task to be addressed by the present invention are to overcome the defects of the prior art mentioned above, to provide a flint wheel lighter with improved safety performance.

[0004] The invention provides a flint wheel lighter with a safety rod, 30 which can prevent fire disasters and accidents by using the safety rod for

controlling the operation of the flint wheel.

[0005] The lighter with a safety rod provided by the invention comprises a casing, a fuel container disposed in the casing, a vent assembly, an ignition assembly, a windproof hood above the fuel container. The 5 ignition assembly is disposed on the other side opposite to the windproof hood. Said ignition assembly comprises a press plate, a flint, and a flint wheel. A bent safety rod is disposed on the side surface of the flint wheel, with both ends of the two sections of the bent rod protruding out of the rim of the flint wheel. In a safety mode, the end of one section butts the inner 10 surface of the top cover of the windproof hood, and the end of the other section lies over the flint wheel.

[0006] Specifically, the invention provides a flint wheel lighter with a safety device. The lighter comprises a casing, a fuel container disposed in the casing, a windproof hood above the fuel container, a vent assembly 15 disposed on the side same as the windproof hood, and an ignition assembly disposed on the other side. Said ignition assembly comprises a press plate, a flint, a flint spring, and a flint wheel, which are assembled in a conventional way. Said vent assembly comprises a vent valve and a vent needle cooperating with the press plate, characterized in that a bent safety 20 rod rotatable with the flint wheel is disposed on the side surface of the flint wheel, the two sections of the bent rod form an angle ranging from 60° to 150° with both ends of the two sections protruding out of the rim of the flint wheel. In safe mode, the end of one of the section butts the inner surface of the top cover of the windproof hood, and the end of the other 25 section lies over the flint wheel.

[0007] Further description of the invention will be provided below with reference to the accompanying drawings.

### **Brief Description of the Drawings**

[0008] Fig. 1 is a schematic view of the configuration of a first

embodiment of the invention in a normal mode (safety mode);

[0009] Fig. 2 is a schematic view of the configuration of the first embodiment of the invention with the safety mode disabled;

5 [0010] Fig. 3 is a schematic top view of the first embodiment shown in Fig. 1;

[0011] Fig. 4 is a top view of Fig. 2;

[0012] Fig. 5 is an enlarged perspective view of the safety rod in the first embodiment;

10 [0013] Fig. 6 is a schematic view of the configuration of a second embodiment of the invention in a normal mode (safety mode);

[0014] Fig. 7 is a schematic view of the configuration of the second embodiment of the invention with the safety mode disabled;

[0015] Fig. 8 is a top plan view of the second embodiment of the invention shown in Fig. 6;

15 [0016] Fig. 9 is a top plan view of Fig. 7;

[0017] Fig. 10 is an enlarged perspective view of the safety assembly in the second embodiment.

[0018] Reference number list

1: casing

20 2: fuel container

3: windproof hood

4: press plate

5: flint

6: flint spring

25 7: flint wheel

8: vent valve

9: vent needle

10: bent safety rod

11: shaft hole

30 **Detailed Description**

[0019] The technical solution of the invention can be concluded as follows: a flint wheel lighter with a safety rod, comprises a casing, a fuel container disposed in the casing, and a windproof hood above the fuel container. A vent assembly is disposed on the same side as the windproof

hood inside the casing. An ignition assembly is disposed on the other side. Said ignition assembly comprises a press plate, a flint, a flint spring, and a flint wheel, which are assembled in a conventional way. Said vent assembly comprises a vent valve and a vent needle, which are assembled in a conventional way. The vent needle functions to cooperate with the press plate. A bent safety rod rotatable with the flint wheel is further disposed on the side surface of the said flint, the two sections of the bent rod form an angle ranging from 60° to 150° with both ends of the two sections protruding out of the rim of the flint wheel.

[0020] In the normal mode (safety mode), the end of one section of the bent safety rod butts the inner surface of the top cover of the windproof hood, and the end of the other section lies over the flint wheel. The angle formed by the two sections is used to satisfy what needed for producing electric sparks by clockwise rotating the flint wheel. In the normal mode, the lighter is in safety mode, because the end of one section of the safety rod sits against the inner surface of the edge of the top cover of the windproof hood and the flint wheel cannot be rotated clockwise. During operation, the user should firstly rotate the safety rod counterclockwise, until the section of the safety rod above the flint wheel butts the exterior surface of the rim of the top cover of the windproof hood, and the other section of the safety rod is kept away from the inner surface of the edge of the top cover of the windproof hood. At this point, rotating the flint wheel clockwise further will make the flint of the ignition assembly produce electric sparks. At the same time, the user may ignite the lighter by pressing down the press plate with a finger to make the vent valve let out the flammable gas. After the lighting operation, since the safety rod rotates with the flint wheel to cause the end of left section of the safety rod butting against the inner surface of the edge of the top cover of the windproof hood, the lighter will be back to the safety mode again.

### 30 **First Embodiment**

[0021] As shown in Figs. 1-5, a flint wheel lighter with a safety rod comprises a casing 1, a fuel container 2 disposed in the casing, and a windproof hood 3 above the fuel container. A vent assembly is disposed on the same side as the windproof hood 3. An ignition assembly is

disposed on the other side. Said ignition assembly comprises a press plate 4, a flint 5, a flint spring 6, and a flint wheel 7 which are assembled in a conventional way. Said vent assembly comprises a vent valve 8 and a vent needle 9 which are assembled in a conventional way. The vent  
5 needle 9 functions to cooperate with the press plate 4. A bent safety rod 10 rotatable with the flint wheel 7 is deposited on one side of the flint wheel 7. The safety rod 10 is provided with a correspondent pivot hole 12, and its two sections form an angle of 120°. Both ends of the two sections protrude out of the rim of the flint wheel 7. In the normal mode (safety  
10 mode), the end of the left section butts against the inner surface of the edge of the top cover of the windproof hood 3, and the end of the right section is above the top-right side of the flint wheel 7.

[0022] During operation, a user should firstly rotate the safety rod counterclockwise until its right section butts against the exterior surface of the edge of the top cover of the windproof hood, and then rotate the flint wheel clockwise such that the flint of the ignition assembly produce electric sparks. At the same time, the user may press down the press plate with a finger to make the vent valve let out the flammable gas, so as to ignite the lighter. After the lighting operation, since the safety rod rotates  
20 with the flint wheel, the left section end of the safety rod will butt against the inner surface of the edge of the top cover of the windproof hood again, and the lighter will be back to the safety mode.

## Second Embodiment

[0023] As shown in Figs. 6-10, what differs the second embodiment  
25 from the first one lies in that the former has two of said bent safety rods 10 disposed on both sides of the flint wheel 7. The two bent safety rods 10 are connected by a shaft 11. The three components, the bent safety rods and the shaft, form a safety assembly. In this way, the two sides of the flint wheel have said safety rods disposed thereon, said safety rods are parallel with one another and connected by a shaft to form a safety  
30 assembly for achieving a better safety effect.

[0024] In the embodiments, the flint wheel and the safety rod of the said flint wheel lighter with a safety rod are coaxially connected (the safety rod has a correspondent pivot hole), so the safety rod may rotate together

with the flint wheel. The structure of the invention is simple, with a safety rod rotatable with the flint wheel additionally disposed on the prior art flint wheel lighter. The safety rod can effectively control the action of the flint wheel, so that the production of electric sparks can be controlled to 5 avoid the fires or accidents caused by the children playing with the flint wheel lighter, thereby improves the safety performance of the flint wheel lighter.